HOW THE BLIND ARE TAUGHT

by

John P. Ritter

Byron never, to my notion, touches the deeper and finer poetic chords. He is witty, he is brilliant, he is eloquent, but is he ever truly poetical? He stirs the blood, he kindles the fancy, but does he ever diffuse through the soul the joy and the light of pure poetry? Goethe expressed almost unbounded admiration for Byron, yet admitted that he was too worldly minded, and that a great deal of his poetry should have been fired off in Parliament in the shape of parliamentary speeches. Wordsworth, on the other hand, when he was not prosy and heavy, was poetical, he was never eloquent.

A fine sample of eloquence in poetry is Browning's "How they brought the Good News from Ghent to Aix." Of its kind there is nothing in the language to compare with it. One needs to read such a piece occasionally as a moral sanitary measure; it aërates his emotions as a cataract does a creek. Scott's highest excellence as a poet is his eloquence. The same is true of Campbell, though the latter's "To the Rainbow" breathes the spirit of true poetry.

Among our own poets Halleck's "Marco Bozzaris" thrills us with its fiery eloquence. Dr. Holmes' "Old Ironsides" also is just what such a poem should be, just what the occasion called for, a rare piece of rhymed eloquence.

Eloquence is so good, so refreshing, it is such a noble and elevating excitement, that one would fain have more of it even in poetry. It is too rare and precious a product to be valued lightly.

Here is a brief sample of Byron's eloquence:

"There, where death's brief pang was quickest,
And the battle's wreck lay thickest,
Strewed beneath the advancing banner
Of the eagles' burning crest—
There with thunder-clouds to fan her
Victory beaming from her breast!
While the broken line enlarging
Fell, or fled along the plain;—
There be sure *Murat* was charging!
There he ne'er shall charge again!"

This from Tennyson is of another order:

"Thy voice is heard through rolling drums
That beat to battle where he stands;
Thy face across his fancy comes,
And gives the battle to his hands:
A moment, while the trumpets blow,
He sees his brood about thy knee;
The next, like fire, he meets the foe,
And strikes him dead for thine and thee."

The chief value of all patriotic songs and poems, like Mrs. Howe's "Battle Hymn of the Republic," or Mr. Stedman's John Brown poem, or Randall's "Maryland," or Burns' "Bannnockburn," or Whitman's "Beat! Beat! Drums," is their impassioned eloquence. Patriotism, war, wrong, slavery, these are the inspirers of eloquence.

Of course no sharp line can be drawn between eloquence and poetry; they run together, they blend in all first-class poems; yet there is a wide difference between the two and it is probably in the direction I have indicated. Power and mastery in either field are the most precious of human gifts.

HOW THE BLIND ARE TAUGHT.

BY JOHN P. RITTER.

IT is the popular opinion that the blind are taught to read and cipher by means of a raised alphabet similar to that used by the seeing, but such is not the case. A system of raised points or dots has been perfected, based upon scientific principles, which has greatly facilitated their education.

The first intelligent effort to educate the blind was made in 1784 by Valentin Haüy, a Frenchman. Before his time they were entirely dependent upon their friends or public charity for support. Since he demonstrated that they are capable of receiving instruction and becoming self-supporting, a deeper interest has been taken in their welfare, and schools have been established for their special training in every civilized part of the world.

In Europe there are between eighty and ninety institutions for the blind; in the United States, twenty-eight; in Canada and Nova Scotia, three; in Mexico, one. Several thriving schools exist in the South American states and in Australia. Similar establishments have been founded in China and Japan; so that one of the most beneficent enterprises of modern civilization has been

advanced into every continent save Africa.

For the purpose of ascertaining the practical results of education, as shown by the blind after leaving school, a committee was appointed, several years ago, by the American Association of Instructors of the Blind, to compile a table setting forth the various occupations they pursued. The following statement, taken from the committee's report, includes only those educated in American institutions:

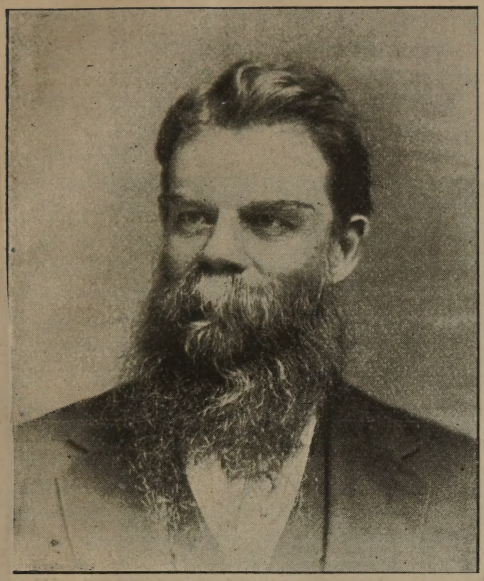
Superintendents of institutions for the blind, 16; superintendents of orphan asylums, 6; teachers of literature in schools other than for the blind, 49; teachers of literature or music in schools for the blind, 115; otherwise employed in schools for the blind, 39; teachers in public schools, 13; students attending colleges or theological seminaries, 10; graduates from colleges and theological seminaries, 18; ministers, 36; studying or practicing law, 5; justice of the peace, 1; editors, 2; authors, 17; publishers, 8; agents and lecturers, 70; teachers of music elsewhere than at institutions, 463; church organists, 88; piano tuners, 125; composers and publishers of music, 14; teachers of handicraft in institutions, 20; engaged in manufacturing, 305; working at handicraft, 702; storekeeping and trading, 269; owning and managing real estate, 59; sawing and lumbering, 7; farmers, 59; teachers and operators of knitting machines, 3; employed by sewing machine companies, 2; hotelkeeper, 1; housekeepers, 205; insurance brokers, 2; newspaper venders, 7; physicians and medical students, 6; stock operator, 1; dealers in musical instruments, 6; carpenter, 1; employed in printing office, 2; employed in sash and blind factory, 1; florist, 1; switch tenders, 2; cabinet makers, 2; mail contractors and carriers, 2; assistant in restaurant, 1; sailor and cook, 1; horse dealers, 9; usefully employed at home, 666.

The information here given shows that there is a wide range of pursuits in which the educated blind may promote their own welfare, while contributing at the same time to the comfort and well-being of society. It affords also conclusive evidence of the good accomplished by institutions founded for their special training.

Although to Valentin Haüy must be attributed the initial step in rendering the blind useful members of the community, he was not the first who was solicitous regarding their welfare. The first known asylum for the blind was founded at Paris in the year 1260 by Louis IX., or St. Louis, and was called the *Hospice des Quinze Vingts*. It was merely a refuge for blind soldiers, however, and was in no sense an educational school. The earliest suggestion that the blind might be educated was ventured in a pamphlet published in 1670 by Lana Terzi, a Jesuit of Brescia, who had already written an essay on the instruction of deaf-mutes. Nearly a century later, the Abbé Deschamps and Diderot proposed plans for their instruction in reading and writing; but it was not until Haüy began his labors that any practical results were accomplished. His first pupil was a beggar, named Leseur, who afterwards became instrumental in promoting the education of his fellow unfortunates. Haüy succeeded in teaching him to distinguish raised letters, arithmetical figures, and outline maps. He then exhibited him before the members of the *Société Philanthropique* in Paris.

Perkins Institution and Massachusetts Asylum for the Blind.

At that time the mutterings of the storm that was soon to sweep over France—the whirlwind of the Revolution—were plainly distinguishable along the horizon of the future. The grandees in their palaces trembled at the sounds, and sought to avert the disaster by feigning an interest in the



William B. Wait. Perfecter of Point-Print Alphabet and System of Musical Notation.

down-trodden poor, made desperate by centuries of oppression. Charity became the fashion, and the rich vied with each other in making an ostentatious display of benevolence.

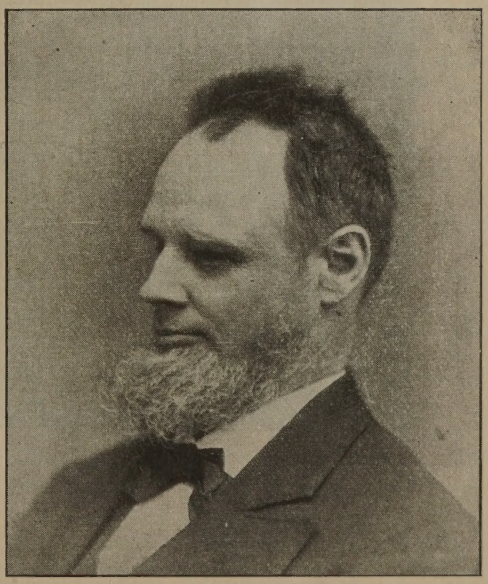
Haüy's idea was novel, and was quickly taken up. A small house was furnished at No. 18, *Notre Dame des Victoires*, in Paris, and funds enough were contributed to maintain twelve pupils. Before the year was out, the number was increased to twenty-four. Under his instructions they improved so rapidly that he was finally induced to exhibit them before Louis XVI. and his court.

In 1791 his school was taken under the patronage of the state, and after the establishment of the empire was transferred to the *Hospice des Quinze Vingts*. Here the pupils became demoralized by associating with the inmates of that institution, and Haüy's efforts were for a time paralyzed. He therefore directed his energies into channels outside of France, and at the invitation of Alexander I. visited Russia and founded an institution for the blind in St. Petersburg. He was afterwards instrumental in founding a similar institution in Berlin. In 1814 the French government assigned to Haüy's school separate quarters, and the title of "Royal Institution for the Blind."

The first English school for the blind was founded at Liverpool in 1791. In 1793 similar schools were established at Bristol and Edinburgh. The first institution established in the United States was the "Perkins Institution and Massachusetts Asylum for the Blind" in 1829. At least that is the title by which it is now known. Its location is at Boston, and it can claim the distinction of having evolved one of the greatest marvels of the century,—Laura Bridgman.

The New York Institution for the Blind was the second American school, and was founded in 1831. Mr. William B. Wait, the present superintendent, profiting by the experiments of others, and after a lifetime spent in prosecuting special investigations, has succeeded in inventing or rather evolving an alphabet, founded on physiological principles, which not only can be read with facility, but be written by the blind. As its basis is purely mathematical, it also admits the writing and reading of music. But before explaining Mr. Wait's method, it would be well to review the means of education in the useful and manual arts, as practiced in the New York Institution for the Blind and other institutions. It is the general practice to instruct the larger girls in needlework and the use of the sewing machine, and the boys in the art of music and in the tuning of pianos. The little ones are given a kindergarten course.

The kindergarten apartment is oblong in shape, and a long table extends crosswise



Stephen Babcock. A Blind Instructor of the Blind at the New York Institution.

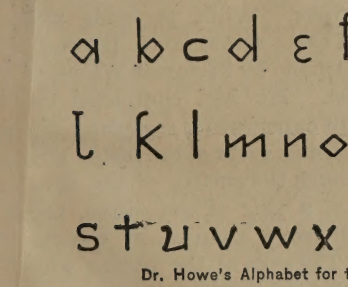
In the Sewing Room of the New York Institution for the Blind.

from wall to wall. Around it sit the children, their ages varying from five to seven years. They are working in a mass of soft clay.

That children, totally blind from infancy, should have conceived such accurate ideas of external objects by the sense of touch alone is truly remarkable. By presenting to them objects accurately modeled they are taught to know what form and extent mean.

In the sewing room there are six machines which the girls take turns in learning to use. While one set are at the machines, the other girls are engaged in hand sewing and embroidery. There is a large glass case at one end of the room which contains many fine specimens of their handiwork.

Returning to the systems that have been in vogue from the days of Valentin Haüy to the present time: Haüy's alphabet was the Roman scrip in relief. It was written clumsily upon parchment, or coarse paper, the material employed being a thick mucilaginous substance that adhered to the sheet, while, at the same time, presenting a raised surface that could be traced by the fingers. Many years later—from the best information I have received, about 1832—Gall, Allston, and Frye suggested, at nearly the same time, the use of Roman capital and lower case block letters. Dr. Samuel G. Howe, of Boston, took up the idea and improved upon it. He modified the alphabet so that the letters had an angular formation.



Dr. Howe's Alphabet for the Blind.

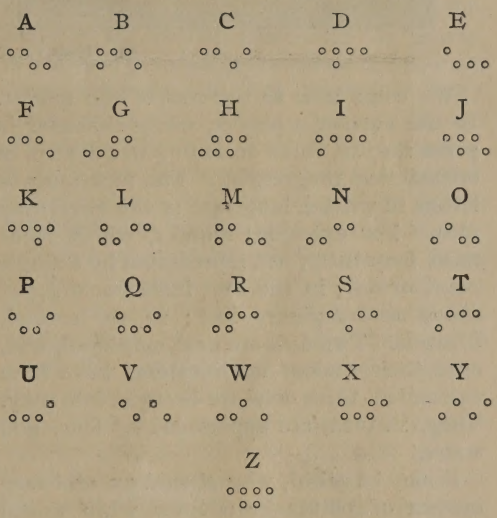
In the meantime a Frenchman, Charles Barbier, had invented an alphabet of points on a vertical type. This was about 1825. His device consisted of raised points made on stiff paper. In his alphabet he employed twelve points, the letters being distinguished one from another by the various modifications these points could be made to assume.

Braille, himself a blind man, who had studied Barbier's system, reduced it by one half, so that six points and their modifications became the recognized alphabet for the blind in France. He also devised a simple form of musical notation. This system is still used in many European schools.

Mr. Wait's invention is based upon Braille's point-print alphabet of six raised points; but instead of being stamped vertically on the sheet, the dots are stamped horizontally, a series of experiments having proved that this arrangement of the characters can be read with greater facility.

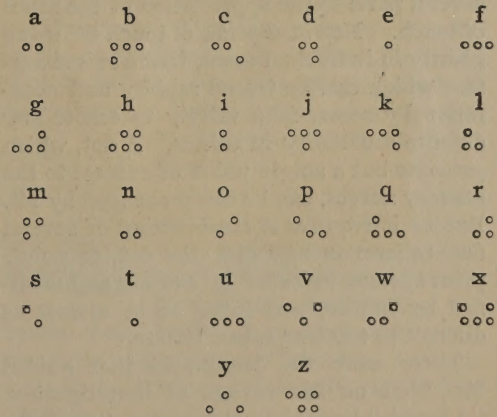
The following is Mr. Wait's alphabet:

CAPITAL LETTERS.



It would require considerable space to explain the principle governing this alphabet of capitals. It will be sufficient to state, therefore, that the capitals are derived from the small letters.

SMALL LETTERS.



Clay Models made by Blind Children.

We come now to the root of the matter. In the smaller alphabet, every character is given its just value according to a system of arithmetical progression. The recurrence of letters in written language is the governing idea. For example: *e* and *t*, which recur most frequently, are represented by a single point or dot; in the first instance, stamped above an imaginary line; in the second, below it. Two dots are next employed, and, after their several modifications have been exhausted, three dots are brought into play. They, in turn, are superseded by four, and so on.

It may be asked, why should an arbitrary system of points be adopted when raised letters, that correspond in form to those used by the seeing, would seem to be sufficient? Only those who have struggled with the problem of furnishing the blind with a tangible alphabet can give a satisfactory answer to this question. A letter is composed of straight lines, curves, or angles, and presents several parts to the appreciation of the sense of touch. Now, the sense of touch differs so greatly in individual cases, that a raised surface which can be traced rapidly and accurately by some, fails utterly to excite any definite sensibility in others. A dot, which presents but a single point of contact to the sensory nerves, can be comprehended by all. But as it requires a combination of several dots to form an alphabet, the dot, or point-print system, invented by Barbier and modified by Braille, was found to be almost as difficult to teach as raised letters.

These were the landmarks that guided Mr. Wait on his voyage of investigation. "I found," he said to the writer, "that the ordinary raised alphabet, even when simplified, required of the pupil exquisite sensibility of touch and a quick intelligence. I visited many schools and examined the pupils; but in every instance found not more than two or three scholars in a hundred who were apt. Others could read slowly, and a large percentage not at all. I became convinced that a 'raised alphabet,' corresponding to the alphabet of the seeing, was not adapted to the purposes of the blind. I was familiar with Braille's system, and it offered me a suggestion.

"Knowing that the sense of touch is exquisitely developed in the blind, I came to the conclusion that there must be some parts of the body more lively to the sensation of contact than others. While pursuing my investigations, I came across some interesting observations made by Professor Weber, a German scientist. He had completed an elaborate series of experiments regarding the sensibility of different parts of the body. His method was to touch the surface of the skin with the legs of a pair of compasses, the points of which were guarded by minute pieces of cork. The eyes of the person who was being operated upon were closed in every case. Gradually the legs of the compasses were approximated to each other, until they were brought to the smallest distance at which they could be felt to be distinct from one another, which has been termed by Dr. Graves 'the limit of confusion.'"

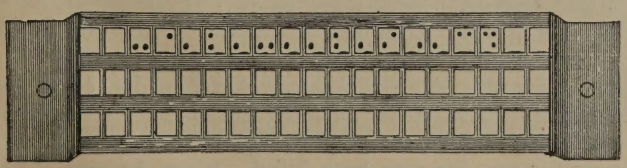
The following are some of the results of Professor Weber's experiments: It was ascertained that when the points were separated one half a line, or one twenty-fourth of an inch apart, they could be distinguished at the

tip of the tongue only. On the palmar surface of the third phalanx of the forefinger two sensations were experienced one line apart; on the second phalanx, two lines apart; on the third phalanx, three lines apart.

For practical purposes, the limit of the discriminating power of the tactual sense may be taken to be one line, or one twelfth of an inch. Should the separating space be less than this, confusion is the result. It is a curious fact that the distance between the legs of the compasses seemed to be greater (although really so much less) when it was felt by the more sensitive parts, than when it was estimated by parts of less distinct sensibility. With the extremities of the fingers and the point of the tongue the distance could be distinguished most easily in the longitudinal direction. It may be inferred, therefore, that the necessary quality in any raised alphabet is that which conforms in its structure to physiological conditions, and to the laws which govern the normal action and proper use of the tactual and muscle senses. Hence Mr. Wait's system of point-print letters is made up of dots placed one line, or one twelfth of an inch, apart and running in a longitudinal direction in order to conform to the foregoing principles.

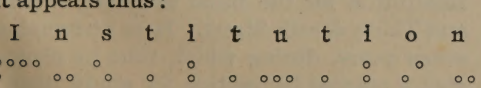
The writing is produced by a stencil upon stiff paper especially prepared for the purpose. The writer makes his indentations upon the back of the sheet from right to left, so that when the paper is turned over to bring the raised dots uppermost, the writing appears in its natural order from left to right. By passing the forefinger over these raised dots, a blind person can read with comparative facility.

When writing, a guide is used to keep the dots in their proper position. The following cut represents the guide employed by Mr. Wait's pupils, showing the word INSTITUTION as it appears when written:



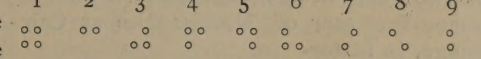
When the paper is turned over for reading it appears thus:

I n s t i t u t i o n



The same system of raised points is adapted to the reading and writing of music, and also to mathematical calculations. In arithmetic the numerals are as follows:

1 2 3 4 5 6 7 8 9 0



These characters, combined with point-print letters, form the basis of algebraic symbols. For plus, the letter *p* is written; for minus, or subtract, the letter *s*; for multiply by, *m*; for the radical sign, *rad*, etc. To indicate the power to which a quantity is to be raised, write after the quantity, *pr*, followed by the number indicating the power. It has been found of great advantage to have the pupils write out their lessons in every branch of study. These manuscripts are afterwards bound in order to be preserved. A pupil may, while prosecuting his studies, collect quite a valuable library for future reference; for books made in this manner will endure constant use for years. There are two branches of study for which the blind are peculiarly adapted—music and mathematics. In music they have made wonderful progress, and many noted musicians have been blind men.

Mr. Wait has invented a system of musical notation that is held to be the best system that can be employed for the blind. It took him years of the hardest labor to bring it to its present condition.

At tuning pianos the blind are exceedingly expert. It seems that with the loss of the sense of sight, that of hearing becomes so acute that they can distinguish the slightest variation of tone and pitch. For this reason they are sure to make a good living in the outside world if they apply themselves to learning this trade. There are large tuning rooms in the institutions both at New York and Boston, well supplied with pianos. The boys may be seen in them at all hours of the day, tuning fork in hand, practicing their trade.

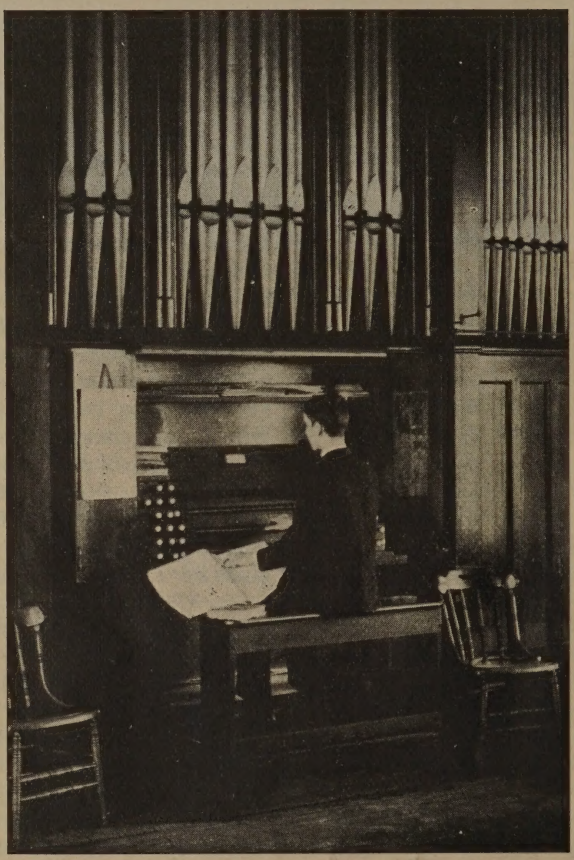
One of Mr. Wait's pupils, Henry Tschudi, a blind lad of eighteen years, can perform most difficult compositions on the organ, transferring his hands from keyboard to keyboard, using the stops with taste and precision, and running along the foot-pedals with perfect fearlessness.

Among the noted blind mathematicians

there is one gentleman, Mr. Stephen Babcock, who has taught the blind in the New York Institution for many years past.

The case of Saunderson, who lost his sight at two years of age, and late in life became Professor of Mathematics at Cambridge, is historical. It is said of him that he could distinguish genuine medals from imitations more accurately than many connoisseurs in full possession of their senses.

The most noted blind man in America is probably Lewis B. Carll, the author of "A Treatise on the Calculus of Variations," a work which created a deep impression among mathematicians, both in this country and abroad. Few of the learned men who praised the book for its lucidity knew of the difficulties under which the author had labored. It took him about ten years to complete this admirable work.



Reading Music by Touch.

"After I had determined on the task," said Mr. Carll, "I became aware that many obstacles were to be overcome. First among them was the difficulty of obtaining a competent reader. While I was at school and during my college course, the different members of my family took turns in reading my lessons aloud to me, while I transcribed them into the point-print alphabet invented by Mr. Wait. It became necessary for me to enlist the members of my family in this new enterprise. I got them to take turns in translating the French and German writings that I had obtained with difficulty from various sources; and I transcribed the most important passages into the point-print. Thus in six or seven years I compiled a vast quantity of materials which I could go over and classify at leisure. Every problem and demonstration I was careful to copy and verify.

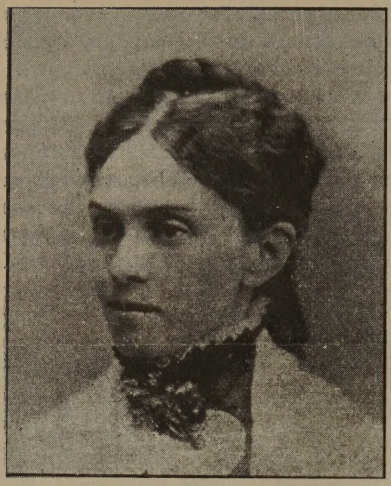
"Although I, like most blind persons, can carry a long sequence of mathematical deductions in my head, I prefer always to work it out upon paper. But the point-print alphabet makes no provision for the arbitrary symbols of higher algebra. I was compelled, therefore, to invent combinations of dots that would clearly express these symbols. It took me a long time to get up a satisfactory system. After I had collected sufficient material, and had worked out innumerable problems, I began my book. A brother acted as my amanuensis, I dictating from my point-print notes, which nobody under the sun could read but myself, and he writing from my dictation with the utmost care. For three years we continued this work together, and at the end of that period the work was finished. It was a tremendous undertaking, and I was glad when it was accomplished."

A short personal sketch of Mr. Carll may not be amiss here. Lewis B. Carll was born at Whitestone, Long Island, June 15, 1843. He was born blind. When he was eleven years old, he was sent to the New York Institution for the Blind at Ninth Avenue and Thirty-fourth Street. Here he remained seven years, during which time he showed such a marked inclination for study, that it

was resolved to give him a thorough classical education, with the view of fitting him for the profession of tutor. He was sent, therefore, to the Fairfield Academy, at Flushing, L. I., to prepare himself for college. In 1866, he entered Columbia and graduated from that university in 1870. Seth Low, now the president of the college, graduated first in the class. The second honors were awarded to Mr. Carll. Since the publication of his book, he has cherished the idea of writing a history of the rise and progress of mathematics. It is confidently hoped he may be able to carry out his plan. He is now instructor in mathematics in Columbia College.

I have endeavored to point out the principles applicable to the construction of a tangible alphabet for the blind. These principles constitute the standard by which all future alphabets must be governed. So far the Wait point-print alphabet appears to have produced the best results. Yet the subject is worthy the further attention of educators of the blind and the consideration of philanthropists everywhere. Much has been accomplished, but much may yet be done by the science of contrivance and the perfectness of mechanical skill.

A Blind Boy Learning Piano-Tuning.
In the Tuning Room of the New York Institution.



Mrs. Flora Best Harris.

Author of "A Glance into Little China," "Rabboni," etc. Translator of "Log of a Japanese Journey."

Miss Helen Frances Shedd.

Author of "Development of Our Industries through Patents."

Miss Virna Woods.

Author of "The Amazons, A Lyrical Drama," "At Eventide," "Infinity," "On Shore," etc.

Miss Kate Carnes.

Author of "A Heroine of Our Day," "Homesteads for Women," "Our Indian Tribes," etc.

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